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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,801	01/26/2004	John W. Juvinall	18261 USA	2497

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EXAMINER	
COHEN, AMY R	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,801	JUVINALL ET AL.	
	Examiner	Art Unit	
	Amy R Cohen	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/18/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 42, 110, 114, 124. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 4 is objected to because of the following informalities:

Claim 4, line 2 "image process or" should read --image processor--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 7-9, 14-16, 18-22, 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Woodrow et al (U. S. Patent No. 4,165,939).

Woodrow et al. teaches an apparatus (13) for inspecting lean of a container (12) having a container bottom (Fig. 4), which includes: means (11) for holding a container in position and rotating the container around an axis, a light source (16) positioned beneath the container in said means for directing light energy onto the bottom of the container, a light sensor (24) positioned beneath the container to receive portions of the light energy from said source reflected from the container bottom, and an information processor (26) coupled to said light sensor for determining, as a combined function of said reflected light energy and container rotation, departure of the container bottom from a plane perpendicular to said axis (Col 5, lines 33-61).

Woodrow et al. teaches the apparatus wherein said light energy is directed from said source onto a periphery of the container bottom (Figs. 3, 8-11 and 14).

Woodrow et al. teaches an optical inspection apparatus (13) for inspecting the bearing surface of a container, comprising: a light source (16) positioned generally beneath the bearing surface and being capable of emitting light that strikes the bearing surface, a light sensor (24) positioned generally beneath the bearing surface and being capable of receiving light reflected from the bearing surface and providing a sensor output signal representative of the reflected light, and an information processor (26) for receiving said sensor output signal and utilizing said signal to determine the departure of the bearing surface from a plane that is perpendicular to an axis of the container (Col 5, lines 33-61).

Woodrow et al. teaches the optical inspection apparatus wherein said light source is positioned to emit incident light that strikes the bearing surface of the container at an acute angle, with respect to the axis of the container (Figs. 3, 9-11).

Woodrow et al. teaches the optical inspection apparatus wherein said light sensor is positioned to receive light reflected from the bearing surface at an acute angle, with respect to the axis of the container (Fig. 3 and Col 5, lines 11-29, Col 5, line 44-Col 6, line 9).

Woodrow et al. teaches the optical inspection apparatus wherein said light source comprises a laser diode and a line generator for emitting an incident line-shaped light beam (Col 4, lines 65-68).

Woodrow et al. teaches the optical inspection apparatus wherein said light sensor comprises an array sensor having a plurality of pixels, each of said pixels being capable of generating a numerical value representative of the light intensity at said pixel (Col 5, lines 11-43 and Col 7, lines 1-12).

Woodrow et al. teaches the optical inspection apparatus wherein said apparatus further includes a lens system (23) positioned generally between the bearing surface and the light sensor.

Woodrow et al. teaches an indexing and inspection machine for inspecting containers, said machine comprising an inspection station that includes the optical inspection apparatus (Col 1, lines 15-18 and Col 4, lines 20-50).

Regarding claim 3: Woodrow et al. teaches the optical inspection apparatus wherein the container may include defects, and wherein the image processor is responsive to the reflected light energy to determine the depth of the defects (Col 3, lines 30-53, Col 5, lines 20-61, wherein knurling is a defect which would be present and detected in the container bottom)

Regarding claims 18-22: Woodrow et al. teaches the optical inspection apparatus wherein said apparatus is adapted for inspecting a bearing surface having a plurality of defects (Col 3, lines 30-53); the light sensor received non-continuous reflections from the defects (Col 5, line 11-Col 6, line 9, specifically Col 5, line 62-Col 6, line 9); wherein said sensor outputs signals representing the defects (Col 5, line 11-Col 6, line 9); wherein said electronic processor is adapted to utilize the information to determine characteristics of the container (Col 5, lines 20-61). With respect to the term "adapted to" in claims 18-22: Woodrow et al. teaches an optical inspection apparatus which is considered to be "adapted to" detect a plurality of knurls as stated in the claim. Furthermore, the term "adapted to" makes what follows a functional statement and not a positive limitation because it has been held that the recitation that an element is "adapted to" perform a function only requires the ability to so perform. It does not constitute a limitation in any patentable sense. ***In re Hutchinson***, 69 USPQ 138. Therefore, the inspection apparatus of Woodrow et al. can be adapted to detect the specific defect of a plurality of knurls.

5. Claims 33-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Gomibuchi (European Patent Application No. 0483966A2).

Gomibuchi teaches a method of inspecting a container bearing surface, comprising the steps of: (a) providing a light source generally facing the bearing surface (Col 5, lines 13-21), (b) providing a light sensor generally facing the bearing surface (Col 5, lines 26-33), (c) rotating the container about an axis (Col 5, lines 15-21), (d) causing said light source to emit light which reflects off of a position on the bearing surface Col 5, lines 15-33), (e) causing said light sensor to record the position at which the reflected light strikes said light sensor (Col 5, lines 26-43), and (f) analyzing the bearing surface from said position data (Col 6, lines 8-21).

Gomibuchi teaches the method wherein step (f) includes analyzing the lean of the container from said position data (Col 3, lines 7-28, wherein "lean" is a defect to be detected).

Gomibuchi teaches the method wherein the bearing surface being inspected is a knurled surface (Col 3, lines 7-28, and Col 3, line 56-Col 4, line 30, wherein "knurl" is a defect to be detected).

Gomibuchi teaches the method wherein step (e) includes compressing data from said recorded position data (Col 4, lines 4-30 and Col 6, lines 32-48).

Gomibuchi teaches the method wherein step (f) includes utilizing a sinusoidal expression to model the bearing surface of the container (Col 6, line 49-Col 7, line 20).

6. Claim 39 is rejected under 35 U.S.C. 102(b) as being anticipated by Gardner (U. S. Patent No. 4,751,386).

Gardner teaches a method of reducing the amount of data processed during optical inspection of a container bearing surface, comprising the steps of: (a) providing an optical inspection apparatus (10) having a light source (12, 14, 16), a light sensor (18, 20, 22), a pre-processor and a primary processor (Col 4, lines 3-17); (b) causing said light source to reflect light off of the bearing surface (Col 3, lines 53-61); (c) causing said light sensor to record the position of the reflected light at a first interval (Col 4, lines 3-17), (d) causing said pre-processor to scan said recorded position data of step (c) at a second interval (Col 4, lines 18-30), said second interval being greater than said first interval, (e) causing said primary processor to analyze the bearing surface from said scanned data of step (d) (Col 4, line 31- Col 5, line 21).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4, 13, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodrow et al. in view of Gomibuchi.

Woodrow et al. discloses the optical inspection apparatus as described above in paragraph 4.

Woodrow et al. does not disclose the optical inspection apparatus wherein said information processor includes a preprocessor for scanning said light sensor at first increments of container rotation, and a main processor for receiving scan data from said preprocessor at second increments of container rotation greater than said first increments; wherein the container is rotated while said light source emits incident light thus causing said incident light to strike different segments of the bearing surface, and said information processor scans said light sensor at increments of container rotation; wherein said information processor includes a pre-processor electronically coupled between said light sensor and said electronic processor, said pre-processor being adapted to compress data from said sensor output signal; wherein said information processor is adapted to generate a sinusoidal expression representative of the height difference between two positions on the bearing surface.

Gomibuchi discloses an optical inspection apparatus (Fig. 2) wherein said information processor includes a preprocessor for scanning said light sensor at first increments of container rotation (Col 5, lines 13-33), and a main processor for receiving scan data from said preprocessor

at second increments of container rotation greater than said first increments (Col 5, line 34-Col 6, line 21); wherein the container is rotated while said light source emits incident light thus causing said incident light to strike different segments of the bearing surface (Col 5, lines 13-21), and said information processor scans said light sensor at increments of container rotation (Col 6, lines 8-21); wherein said information processor includes a pre-processor electronically coupled between said light sensor and said electronic processor, said pre-processor being adapted to compress data from said sensor output signal (Col 6, lines 22-48); wherein said information processor is adapted to generate a sinusoidal expression representative of the height difference between two positions on the bearing surface (Col 6, line 49-Col 7, line 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Woodrow et al. to include rotating the container and inspecting the data at time intervals while the container is rotated in order to receive data regarding the bearing surface of the container, as taught by Gomibuchi, so that a user would be able to have information regarding the entire bearing surface of the container, in order to more accurately determine the defects on the bearing surface.

9. Claims 5 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodrow et al. in view of Waugaman (U. S. Patent No. 5,414,939).

Woodrow et al. discloses the optical inspection apparatus as described above in paragraph 4.

Woodrow et al. does not disclose the optical inspection apparatus wherein means for holding the container in position and rotating the container around an axis includes spaced backup rollers for externally engaging the container, and a drive roller for engaging and rotating the container while holding the container against said backup rollers so as to define an average

axis of rotation as a function of the geometry of the container and spacing between said backup rollers; and a slide plate.

Waugaman discloses an optical inspection apparatus (Fig. 1) wherein means for holding the container in position and rotating the container around an axis includes spaced backup rollers (30, 32) for externally engaging the container, and a drive roller (26) for engaging and rotating the container while holding the container against said backup rollers so as to define an average axis of rotation as a function of the geometry of the container and spacing between said backup rollers; and a slide plate (44) (Col 3, lines 40-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical inspection device of Woodrow et al. to include rollers and a slide plate, as taught by Waugaman, so that the container would be firmly held while being rotated during inspection, thereby, increasing the accuracy of inspecting the bearing surface, by inspecting the bearing surface through a rotation (Waugaman, Col 2, lines 18-54).

10. Claims 6, 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodrow et al. in view of Gardner.

Woodrow et al. discloses the optical inspection apparatus as described above in paragraph 4.

Woodrow et al. does not disclose the optical inspection apparatus comprising two light sources and tow light sensors positioned on diametrically opposed sides of said axis, said information processor being responsive to compression of outputs of said light sensors to indicate lean of a container; said light source and light sensor are part of a first probe and said additional light source and light sensor are part of a second probe; wherein said first probe inspects a first point of the bearing surface and said second probe inspects a second point of said

bearing surface; wherein said first and second points are located at opposite ends of a diameter of the bearing surface.

Gardner disclose the optical inspection apparatus comprising two light sources (12, 14, 16) and two light sensors (18, 20, 22) positioned on diametrically opposed sides of said axis (Fig. 1a, Fig. 3a), said information processor being responsive to compression of outputs of said light sensors to indicate lean of a container (Col 3, lines 4-23); said light source and light sensor are part of a first probe and said additional light source and light sensor are part of a second probe (Col 3, lines 4-23); wherein said first probe inspects a first point of the bearing surface and said second probe inspects a second point of said bearing surface (Figs. 1a and 3a, Col 3, lines 4-23); wherein said first and second points are located at opposite ends of a diameter of the bearing surface (Figs. 1a and 3a, Col 3, lines 4-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Woodrow et al. to include an additional light source and light sensor, as taught by Gardner, in order to simultaneously inspect the container from opposite sides of the container, decreasing the time to inspect the container and increasing the accuracy of the inspection of the bearing surface (Gardner, Col 2, lines 5-45).

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woodrow et al. in view of Minami et al. (U. S. Patent No. 4,230,940).

Woodrow et al. discloses the optical inspection apparatus as described above in paragraph 4.

Woodrow et al. does not disclose the optical inspection apparatus wherein said lens system comprises a cylindrical lens and a spherical lens having a focal point, said light sensor being positioned near said spherical lens focal point.

Minami et al. discloses an optical inspection apparatus (Fig. 1) wherein said lens system comprises a cylindrical lens (10) and a spherical lens (11) having a focal point, said light sensor (15) being positioned near said spherical lens focal point (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lens system of Woodrow et al. to be of a cylindrical lens and spherical lens, wherein the spherical lens focal point is near the light sensor, as taught by Minami et al., so that the light reflected from the container would be focused and in order for the light sensor to accurately sense the light reflected by the container.

12. Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodrow et al. and Gomibuchi as applied to claims 1-4, 7-9, 13-16, 18-25, 32 above, and further in view of Nonaka et al. (U. S. Patent No. 5,195,026).

Woodrow et al. and Gomibuchi disclose the optical inspection apparatus as described above in paragraph 8.

Woodrow et al. and Gomibuchi do not disclose the optical inspection apparatus wherein said information processor uses a least squares fitting technique; wherein the information processor uses an iterative search method, wherein said iterative search method is a golden section search; and wherein said information processor uses a selection process involving min/max data points to improve the efficiency of the least squares fitting technique.

Nonaka et al. discloses an information processor wherein said information processor uses a least squares fitting technique (Table 1); wherein the information processor uses an iterative search method, wherein said iterative search method is a golden section search (Table 1); and wherein said information processor uses a selection process involving min/max data points to improve the efficiency of the least squares fitting technique (Table 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Woodrow et al. and Gomibuchi, to include least squares techniques, as taught by Nonaka et al., in order to improve the accuracy of the data and in order to improve the efficiency of the program (Nonaka et al., Col 3, lines 2-12 and Table 1).

13. Claims 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gomibuchi in view of Nonaka et al.

Gomibuchi discloses the method of inspecting a container bearing surface as described above in paragraph 5.

Gomibuchi does not disclose the method of inspecting a container bearing surface using a least squares fitting technique to analyze the data.

Nonaka et al. discloses an information processor wherein said information processor uses a least squares fitting technique (Table 1) to analyze data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Gomibuchi, to include least squares techniques, as taught by Nonaka et al., in order to improve the accuracy of the data and in order to improve the efficiency of the program (Nonaka et al., Col 3, lines 2-12 and Table 1).

Conclusion

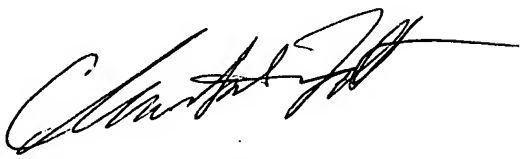
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose inspection apparatus Stork et al. (U. S. Patent No. 6,693,275), Bonewitz et al. (U. S. Patent No. 5,926,268), Baldwin (U. S. Patent No. 5,510,610), and Bhatia (U. S. Patent No. 5,499,718).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
October 29, 2004



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